

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF NEW YORK

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CRYPTO RESEARCH, LLC,	:
Plaintiff,	:
	:
- against -	: <u>MEMORANDUM DECISION AND</u>
	: <u>ORDER</u>
	:
ASSAY ABLOY, INC. and HID GLOBAL	: 16 Civ. 1718 (AMD) (RER)
CORPORATION,	:
Defendants.	:
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ANN DONNELLY, District Judge.

In this patent infringement action, the plaintiff alleges that the defendants, Assay Abloy, Inc. and HID Global Corporation, directly, indirectly, and willfully infringed asserted claims in three patents assigned to the plaintiff by inventor Dr. Bjorn Markus Jakobsson: U.S. Patent No. 8,086,866 (the '866 Patent), United States Patent No. 8,516,262 (the '262 Patent), and United States Patent No. 8,990,576 (the '576 Patent) (collectively the Patents-in-Suit). The defendants move to dismiss, claiming that the patents are directed to subject matter that is not patent-eligible, and that the complaint fails to state a claim for which relief can be granted. The plaintiff opposes. I heard oral argument on February 15, 2017. For the reasons set out below, the defendants' motion to dismiss is denied.

BACKGROUND

A. Background of the Patented Concept¹

The United States Patent and Trademark Office issued the '866 Patent, the '262 Patent, and the '576 Patent, entitled “Methods and Apparatus for Efficient Computations of One-Way Chains in Cryptographic Applications,” on December 27, 2011, August 20, 2013, and March 24, 2015, respectively.

The Patents-in-Suit relate generally to the field of cryptography, a field of mathematics targeted to the secure sharing of information. Applications include, among other things, encryption and decryption, digital signatures, and device authentication. Here, the Patents-in-Suit address a technique for reducing the computation difficulty and storage capacity demands in using one-way chains on “lightweight” processing devices, like mobile telephones and smartcards.² The Patents-in-Suit include apparatus, computer-readable medium, and method claims.

By way of background, a one-way function refers to a scheme that is easy to compute but hard to invert.³ For some cryptographic applications, it is advantageous to use a one-way chain. A chain in this context refers to a series of values, which may be used to “increment time.” However, the conventional use of a one-way chain necessitates either storage of all values or computation by an iterated application of the function. Thus, if no values are stored, then the computation requires an amount of work proportional to the length of the chain. This creates significant storage and computation demands.

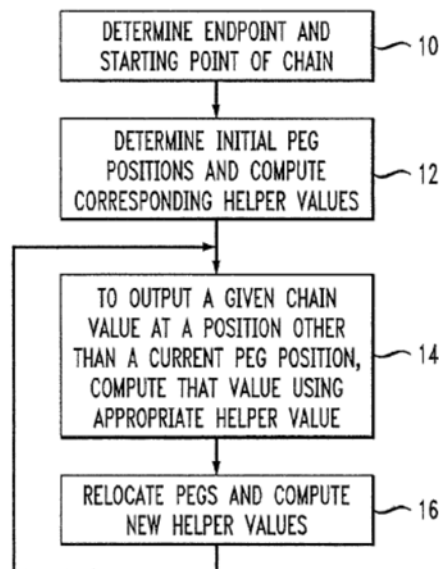
¹ Discussion of the patented concept is taken from the descriptions and claims of the '866 patent.

² “Smartcard” is a term to describe a credit card, which looks like an ordinary credit card, but contains a microprocessor.

³ Said another way, a one-way function is a function f , for which a person can easily find the value y in $y=f(x)$, if the value of x is provided; but that it is difficult to find the value of x , given only the value of y .

The Patents-in-Suit describe a method for finding values in a one-way chain that facilitates computation of other values in a one-way chain, and thus reduces the necessary storage or computation. The patented approach is to use “helper values” or “pegs” to reduce the computation requirements, and to move the pegs to appropriate positions in the chain, so that the efficiency gains are repeated for each chain output value. Below, Figure 2B is an example one-way chain computation process consistent with the patented method:

FIG. 2B



Claim 1 of the '866 patent reads:

1. A method implemented by a processor, the processor being coupled to a memory, the memory having a designated amount of storage available for storing values of a one-way chain, the designated amount of available storage being less than that required to store simultaneously all of the values of the one-way chain, the method comprising the steps of:

storing in the memory a subset of the values of the one-way chain as helper values for facilitating computation of other values of the one-way chain not in the subset, the subset of values of the one-way chain comprising a plurality of designated non-consecutive values of the one-way chain;

utilizing one of the values in the subset of values to compute one of the other values of the one-way chain not in the subset;

generating a cryptographic output determined by the computed value not in the subset; and
updating the stored subset of values of the one-way chain so as to replace at least one of the helper values with a new helper value not previously part of the subset.

(’866 Patent, cl. 1.) To the extent that this patented method improves the storage and computational efficiency of a one-way chain computation process, it also increases the efficiency of any application that uses one-way chain computation. However, nothing in the claims or patent descriptions limits the implementation of the method to a specific type of device.

B. Allegations in the Complaint

According to the plaintiff, the defendants’ CoreStreet-branded and Activ-Identity-branded products—which the defendants “make[], use[], offer[] to sell, or sell[]”—infringed the Patents-in-Suit,⁴ in that the products, upon information and belief, provided certificate validation features “in part through the use of efficient one-way chain computation techniques of the type developed by Dr. Jakobsson and described by the Patents-in-Suit.”⁵ (Compl. ¶ 20.)

The plaintiff concedes that it did not reverse engineer the CoreStreet and ActivIdentity products in order to establish that they used the computation technique covered by the Patents-In-Suit; according to the plaintiff, the CoreStreet and ActivIdentity products were sold subject to an agreement prohibiting buyers from reverse engineering the products. (Compl. ¶ 28.)

In addition to the direct infringement claim, the plaintiff brings claims for indirect infringement. The plaintiff argues that by advertising, selling, licensing, or supporting the products, the defendants induced others to infringe the Patents-in-Suit. (Compl. ¶¶ 39, 48, 60.)

⁴ The allegedly infringing CoreStreet-branded products include the “CoreStreet Validation Suite,” the “CoreStreet Validation Authority,” the “CoreStreet Tactical Validation Authority,” and the “CoreStreet Path Builder.” The allegedly infringing ActivIdentity-branded products include the “ActivID® Validation Authority,” the “ActivID® Tactical Validation Authority,” and the “ActivID® Path Builder.” (Compl. ¶ 17.) At oral argument, the plaintiff clarified that the ActivIdentity-branded products and the CoreStreet-branded products were components in the ASSA Validation Products and the HID Validation Products, referred to in the complaint.

⁵ At oral argument, the plaintiff’s counsel explained that certificate validation is one type of cryptographic application.

Additionally, the plaintiff contends that by selling the products, the defendants contributed to the infringement of the Patents-in-Suit by customers and end-users, who use the CoreStreet and ActivIdentity products for certificate validation. (Compl. ¶¶ 37, 49, 61.) The plaintiff alleges upon information and belief that the defendants’ ActivIdentity and CoreStreet products “have no substantial use outside of the context of certificate validation, which functionality is implemented in such products using efficient one-way chain computation techniques of the type . . . described and claimed in the Patents-in-Suit.” (Compl. ¶ 31.)

Finally, the plaintiff contends that the defendants’ infringement was willful under two separate theories. First, the plaintiff points out that four patents,⁶ referred to in this memorandum as the ASSA Patents—for which the defendants’ parent company, ASSA Abloy AB, is the current assignee—acknowledge that the techniques developed by Dr. Jakobsson provide a “surprising time/storage tradeoff.” (Compl. ¶ 13.) Thus, according to the plaintiff, the defendants knew or should have known that their products infringed the Patents-in-Suit.

Second, the plaintiff maintains that the defendants knew of the specification and issued claims of the Patents-in-Suit, because the plaintiff sent the defendants letters in February, May, and December of 2015, identifying the Patents-in-Suit, the citations to Dr. Jakobsson’s work in the ASSA Patents, and “suggestions in one or more of the ASSA Patents to utilize efficient one-way chain computation techniques of the type developed by Dr. Jakobsson and described and claimed in the Patents-in-Suit.” (Compl. ¶¶ 23–25.) In the May and December, 2015 letters, the plaintiff specifically asked whether the defendants’ products “incorporated techniques based on the aforementioned ‘surprising time/storage tradeoff’ attributed to Dr. Jakobsson in one or more

⁶ Those patents are U.S. Patent No. 7,353,396 (the ‘396 patent), U.S. Patent No. 8,171,524 (the ‘524 patent), U.S. Patent No. 8,732,457 (the ‘457 patent), and U.S. Patent No. 9,230,375 (the ‘375 patent) (collectively the ASSA Patents).

of the ASSA Patents.” (Compl. ¶ 26.) According to the plaintiff, the defendants did not respond. (Compl. ¶ 27.)

C. Procedural History

The plaintiff filed this action on April 8, 2016 to enjoin infringement and obtain damages for the defendants’ alleged infringement of claims 1, 2, 4, 6, 9, 10, 12, 14 and 17-19 of the ’866 Patent; claims 1, 2, 4, 6, 9, 10, 12, 14 and 17 of the ’262 Patent; and claims 1-4, 6, 9 and 13-20 of the ’576 Patent. (*See* Compl. ¶¶ 35, 47, 59.)

The defendants answered and sought a pre-motion conference regarding their anticipated motion to dismiss on June 16, 2016. (ECF Nos. 14, 15.) After a pre-motion conference on July 7, 2016, the defendants moved to dismiss the complaint. I heard oral argument on February 15, 2017.⁷ For the reasons set out below, the defendants’ motion to dismiss is denied.

DISCUSSION

A. Patent-Eligibility of the Subject Matter Under 35 U.S.C. § 101

The defendants move to dismiss the complaint on the grounds that the Patents-in-Suit are invalid for failing to claim patent-eligible subject matter. *See* 35 U.S.C.A. § 101.

Patent validity under Section 101 is a question of law. *See DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1255 (Fed. Cir. 2014). Because patent-eligibility under Section 101 is a threshold question, it may be considered properly on the pleadings. *See In re TLI Commc’ns LLC Patent Litig.*, 823 F.3d 607 (Fed. Cir. 2016) (concluding patented process was abstract, and thus patent-ineligible, on a Rule 12(b)(6) motion to dismiss); *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709 (Fed. Cir. 2014) (finding patented material ineligible for protection on a Rule 12(b)(6) motion to dismiss). Additionally, under certain circumstances, the court may

⁷ The lawyers for both parties were well-prepared and effective. Oral argument proved helpful in clarifying both the complicated subject matter and the parties’ positions.

determine Section 101 validity prior to formal claim construction. *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat. Ass’n*, 776 F.3d 1343, 1349 (Fed. Cir. 2014) (“Although the determination of patent eligibility requires a full understanding of the basic character of the claimed subject matter, claim construction is not an inviolable prerequisite to a validity determination under § 101.”).

The plaintiff contends that I should apply the presumption of validity, and impose upon the defendants the “burden of establishing invalidity of a patent,” 35 U.S.C. § 282, by clear and convincing evidence. (Pl.’s Mem at 6–7 (citing *MultimediaPlus, Inc. v. Playerlync, LLC*, No. 14-CV-8216, 2016 WL 4074439, at *2 (S.D.N.Y. July 29, 2016)).) The defendants oppose the application of the “clear and convincing” standard to the Section 101 inquiry. (Defs.’ Mem. at 8 (ECF No. 21-1).)

I agree with the defendants that the “clear and convincing” standard has no place in resolving a Rule 12 motion, which was brought on the basis that the patent recites ineligible subject matter. In general, courts do not consider evidence outside the pleadings in resolving a motion to dismiss or for judgment on the pleadings. Thus, application of the “clear and convincing standard”—a burden of *proof*—is not logically sound. *See Modern Telecom Sys. LLC v. Earthlink, Inc.*, No. SA CV 14-0347-DOC, 2015 WL 1239992, at *7 (C.D. Cal. Mar. 17, 2015).

This view is consistent with the weight of authority, which suggests that the presumption of validity does not apply in the Section 101 context. *See Ultramercial*, 772 F.3d at 720–21 (Mayer, J., concurring) (“Although the Supreme Court has taken up several section 101 cases in recent years, it has never mentioned—much less applied—any presumption of eligibility. The reasonable inference, therefore, is that while a presumption of validity attaches in many contexts

. . . no equivalent presumption of eligibility applies in the section 101 calculus.”); *OpenTV, Inc. v. Apple, Inc.*, No. 14-CV-01622-HSG, 2015 WL 1535328, at *3 (N.D. Cal. Apr. 6, 2015) (declining to apply presumption of eligibility to Section 1010 consideration); *California Inst. of Tech. v. Hughes Commc’ns Inc.*, 59 F. Supp. 3d 974, 979 n.6 (C.D. Cal. 2014) (“This Court believes that the clear and convincing evidence standard does not apply to § 101 analysis, because § 101 eligibility is a question of law.”); *Modern Telecom Sys.*, 2015 WL 1239992, at *7 (“clear and convincing evidence standard is not necessarily applicable in the context of determining patent-eligibility under § 101, which is a question of law”); *but see Easyweb Innovations, LLC v. Twitter, Inc.*, No. 11-cv-4550-JFB-SIL, 2016 WL 1253674, at *25 (E.D.N.Y. Mar. 30, 2016) (applying validity presumption to Section 101 inquiry). Moreover, although the Supreme Court has considered many Section 101 cases in the past few years, it has not applied the “clear and convincing” standard in evaluating whether a claim is patent eligible pursuant to Section 101. *See Alice Corp. Pty. v. CLS Bank Int’l*, 134 S. Ct. 2347 (2014); *Ultramercial*, 772 F.3d 709; *see also OpenTV, Inc.*, 2015 WL 1535328, at *3 (collecting cases).

The defendants, as the parties moving to dismiss, still bear the burden of demonstrating that the claims are not patent eligible under Section 101. In evaluating whether the claims are patent-eligible, I construe the claims in a “manner most favorable” to the plaintiff. *See Content Extraction & Transmission*, 776 F.3d at 1349.

Under Section 101 of the Patent Act, the ambit of patentable discoveries includes “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.” 35 U.S.C.A. § 101. However, it is well established that “this provision contains an important implicit exception: Laws of nature, natural phenomena, and abstract ideas

are not patentable.” *Alice Corp.*, 134 S. Ct. at 2354 (citation omitted); *see also Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293, (2012).

The Supreme Court recently reaffirmed the two step analysis set out in *Mayo* for “distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts.” *Alice Corp.*, 134 S. Ct. at 2355. Specifically, the court must first determine whether the claims at issue are directed to laws of nature, natural phenomena, or abstract ideas. *Ultramercial*, 772 F.3d at 714. If so, the court must consider whether the claims—both individually and as an ordered combination—include an element that is sufficient to transform the nature of the claim into a patent-eligible application. *Id.*; *Alice Corp.*, 134 S.Ct. at 2355; *Mayo* 132 S.Ct. at 1297–98.

The Supreme Court has cautioned that courts should “tread carefully in construing” the exceptions to Section 101 “lest [they] swallow all of patent law.” *Alice Corp.*, 134 S. Ct. at 2354 (citation omitted). This admonition reflects that “[a]t some level, all inventions . . . embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.” *Alice Corp.*, 134 S. Ct. at 2354 (internal quotation marks and citation omitted); *see also Ultramercial*, 772 F.3d at 715 (use of an advertisement as currency was an abstract idea).

In determining whether the claims of the Patents-in-Suit are directed to an abstract idea—the first step of the *Alice* analysis—the court must identify the purpose of the claims, which is crucial to a meaningful resolution of the Section 101 inquiry. *California Inst. of Tech.*, 59 F. Supp. 3d at 991; *see also Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1337 (Fed. Cir. 2016) (describing claims at too high a level of abstraction “and untethered from the language of the claims all but ensures that the exceptions to § 101 swallow the rule.”); *cf. Diamond v. Diehr*, 450 U.S. 175, 189 n. 12 (1981) (overgeneralizing claims, “if carried to its extreme, make[s] all

inventions unpatentable because all inventions can be reduced to underlying principles of nature which, once known, make their implementation obvious”).

In this case, the parties disagree about the nature of the claims of the Patents-in-Suit. The defendants characterize the patented ideas as “directed to computing values of a one-way chain,” (Defs.’ Mem. at 15 (ECF No. 21-1)), while the plaintiff maintains that the claims:

recite[] a method implemented by a particular type of computer, namely a processor coupled to a memory having a designated amount of storage available for storing values of a one-way chain, where the designated amount of available storage is less than that required to store simultaneously all of the values of the one-way chain. Claim 1 provides improvements in the functionality of that computer, through the particular combination of method steps recited, including storing, utilizing and updating of helper values. Such a combination of limitations was not known in the prior art.

(Pl.’s Mem. at 8 (ECF No. 22).) For purposes of the first step of the *Alice* inquiry, it is sufficient to say that the claims of the Patents-in-Suit are drawn to computation of values in a one-way chain by storing, using, and updating helper values.

While the complaint lists allegedly infringing claims from the Patents-in-Suit, the parties do not distinguish meaningfully between the claims in setting out their characterizations of the claims. The Federal Circuit has held that the district court need not address each claim of the asserted patents individually. *Content Extraction & Transmission*, 776 F.3d at 1348. Instead, if the district court determines that the claims are substantially similar and linked to the same abstract idea, the court may consider a representative claim. *Id.* In this case, while the Patents-in-Suit recite apparatus, computer-readable medium, and method claims, in practical effect, the claims cover the same concept related to the efficient computation of hash values in a one-way chain. Consequently, the claims warrant similar substantive treatment. *CLS Bank Int’l v. Alice Corp. Pty.*, 717 F.3d 1269, 1288 (Fed. Cir. 2013), *aff’d*, 134 S. Ct. 2347 (2014).

Because there is no conclusive method of determining what constitutes an “abstract idea” that meets the first step of the *Alice* framework, courts compare the claims at issue to those claims from previous cases, already determined to be directed to an abstract idea. *Enfish*, 822 F.3d at 1334. “Distinguishing between claims that recite a patent-eligible invention and claims that add too little to a patent-ineligible abstract concept can be difficult, as the line separating the two is not always clear.” *DDR Holdings*, 773 F.3d at 1255. This difficulty is particularly pronounced in the context of patent claims related to computer technology. *See id.*; *see also Intellectual Ventures II LLC v. JP Morgan Chase & Co.*, No. 13-cv-3777-AKH, 2015 WL 1941331, at *5 (S.D.N.Y. Apr. 28, 2015); *cf. Diehr*, 450 U.S. at 194 (Stevens, J., dissenting) (patent law developments in response to new computer technology are of “recent vintage”).

In applying the *Alice* framework to computer technology, courts have treated two types of computer technology patents differently.

In the first line of cases, the Supreme Court and lower courts applying *Mayo*, *Alice*, and their progeny, have repeatedly held that the use of a computer to implement a fundamental economic or conventional business practice does not, by itself, render the claims patent eligible. Put another way, *Alice* stood for the proposition that claims directed to the “same activity” in which “humans engaged . . . long before the invention of computers” were not patent eligible. *Paone v. Broadcom Corp.*, No. 15-cv-0596-BMC-GRB, 2015 WL 4988279, at *9 (E.D.N.Y. Aug. 19, 2015) (citation omitted). In *Alice*, the patent claims at issue merely instructed the user to “implement the abstract idea of intermediated settlement on a generic computer,” and were therefore patent ineligible. *Alice Corp.*, 134 S. Ct. at 2359. In *Ultramercial*, 772 F.3d at 715–16, the Federal Circuit found patent-ineligible the abstract idea of using advertising as currency on the Internet. The claims in *buySAFE, Inc. v. Google, Inc.*, 765 F.3d 1350 (Fed. Cir. 2014), were

patent ineligible because they were drawn to merely using a computer to send and receive information over a network in order to implement the abstract idea of creating a “transaction performance guaranty.” *Id.* at 1355.

However, in a second line of cases, the Federal Circuit has held that some developments in computer-related technology, in which the focus of the claims is on solutions “necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks,” *DDR Holdings*, 773 F.3d at 1257, or on “improvement to computer functionality itself,” are not directed to an abstract idea. *Enfish*, 822 F.3d at 1336.

A divided three-judge panel in *DDR Holdings* affirmed the district court’s decision denying judgment as a matter of law after a trial, and held that the idea to retain website visitors by combining the look and feel of a host website with product information from a third-party merchant’s website was patent eligible. *DDR Holdings*, 773 F.3d at 1257. The majority noted that that while the claims involve both a computer and the Internet, they “do not merely recite the performance of some business practice known from the pre-Internet world along with the requirement to perform it on the Internet.” *Id.* Rather, the patents describe a method, based in computer technology, for solving a problem that specifically arises in the arena of computer technology. *Id.* Thus, the subject matter of the patent was distinguishable from those held patent ineligible in *Ultramercial* and *buySAFE*, among others. *Id.* at 1258–59.

The Federal Circuit took up a similar issue in *Enfish*. There, a unanimous three-judge panel reversed the lower court’s decision granting summary judgment on Section 101 grounds. *Enfish*, 822 F.3d 1329. The case concerned infringement of a patent covering software that included a self-referential table for a computer database. *Id.* at 1332. In determining that the claims were not directed merely to the abstract idea of “storing, organizing, and retrieving

memory in a logical table,” the court noted that the self-referential table functioned differently than a conventional database, and increased flexibility, generated faster search times, and required less memory. *Id.* at 1337. Because the panel determined that the self-referential table was “a specific type of data structure designed to improve the way a computer stores and retrieves data in memory,” the claims were not directed to an abstract idea. *Id.* at 1339.

Most recently, in *In re TLI Commc’ns LLC Patent Litig.*, 823 F.3d 607, the Federal Circuit affirmed a district court’s decision to dismiss a complaint on Section 101 grounds, because the patent-in-suit claimed no more than the abstract idea of classifying and storing digital images in an organized way. *Id.* at 609. The Federal Circuit rejected the plaintiff’s contention that the claims were directed to a specific improvement to computer functionality. *Id.* at 612. Rather, the court found that the claims were “directed to the use of conventional or generic technology in a nascent but well-known environment, without any claim that the invention reflects an inventive solution to any problem presented by combining [a camera with a cellular telephone].” *Id.* at 612.

In this case, the defendants urge that the claims in the Patents-in-Suit were directed to the abstract ideas of “(1) storing values, (2) computing additional values and data, and (3) storing a new value in the place of one of the previously stored values.” (Defs.’ Mem. at 13 (ECF No. 21-1).) However, as the Federal Circuit observed in *Enfish*, “describing the claims at such a high level of abstraction and untethered from the language of the claims all but ensures that the exceptions to § 101 swallow the rule.” *Enfish*, 822 F.3d at 1337; *see also Diehr*, 450 U.S. at 189 n.12 (warning that overgeneralizing claims “if carried to its extreme, make all inventions unpatentable because all inventions can be reduced to underlying principles of nature which, once known, make their implementation obvious.”).

The Patents-in-Suit recite a method for calculating the values of one-way chains that reduce the requirements for storage or computation capacity. The plaintiff maintains and the patents recite that conventional techniques for computing values of one-way chains were known in the art, but necessitated storing all values ahead of time or computing the values as needed. This conventional approach involved a significant drawback, in that it was either storage or computation intensive. The Patents-in-Suit describe the use of “helper values” or “pegs” to reduce computation demands, and a process to move the pegs to various positions in the one-way chain, so that the efficiency gains are repeated for each chain output value. According to the plaintiff, this is an improvement upon conventional methods for computing values in a one-way chain.

The storage and computation difficulty posed by the conventional process for computing values in a one-way chain was a computer-centric problem. The Patents-in-Suit are specifically directed to a technique that solves that problem and improves the functioning of a computer.⁸ In fact, the concept recited in the Patents-in-Suit seems to be the paradigmatic example described in *DDR Holdings* for computer technology claims that are patent-eligible under Section 101, namely “an invention as technologically complex as an improved, particularized method of digital data compression.” *DDR Holdings*, 773 F.3d at 1259.

In light of the line of cases instructing that patents directed to improvements in computer functionality do not fail under Section 101, I conclude that the Patents-in-Suit are not directed to a patent ineligible abstract idea. Nonetheless, because there is not yet a developed evidentiary record, and because some of the cases to consider the patent eligibility of computer-related

⁸ As explained in the Patents-in-Suit, the benefits of the patented technology are even more pronounced in a lightweight device like a mobile telephone.

technology focus on *Alice* step two, I turn to consideration of the second step.⁹ *Cf. Enfish*, 822 F.3d at 1339 (cases in which there are close calls about how to characterize computer-related claims may be considered properly at step two).

Under step two of the *Alice* test, the court must consider whether the elements of the claims, both individually and “as an ordered combination” include an “inventive concept,” that is “sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.” *Alice Corp.*, 134 S. Ct. at 2355. I conclude that the patent claims include an “inventive concept,” such that the idea is not patent-ineligible under Section 101.

In ascertaining whether a process claim recounts an abstract idea, the court must evaluate the claim as a whole, keeping in mind that a concept is not ineligible just because it relies on a mathematical formula. This is because an *application* of a mathematical formula to a process may be deserving of patent protection. *Diehr*, 450 U.S. at 187; *see also Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1350 (Fed. Cir. 2014). However, a claim that recites an abstract idea does not become eligible merely by adding the words “apply it.” *Bancorp Servs., L.L.C. v. Sun Life Assur. Co. of Canada (U.S.)*, 687 F.3d 1266, 1276 (Fed. Cir. 2012) (citing *Mayo*, 132 S.Ct. at 1294.). Likewise, a claim does not warrant patent protection merely by reciting “apply it with a computer.” *Alice Corp.*, 134 S. Ct. at 2358; *see also Content Extraction & Transmission*, 776 F.3d at 1348.

The defendants maintain that the Patents-in-Suit are categorically abstract because they are directed to the field of cryptography. (Defs.’ Mem. at 14–15 (ECF No. 21-1).) This is not so.

⁹ In *Bascom Glob. Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1348 (Fed. Cir. 2016), the court observed that the Federal Circuit has “found software-related patents eligible under both steps of the test *Alice* sets out.”

Two district court cases are instructive. In this district, in *Paone v. Broadcom Corporation*, 2015 WL 4988279, the Honorable Brian Cogan took up the question of whether claims describing computer-implemented methods of encrypting data may be directed to patent-eligible subject matter. As an initial matter, Judge Cogan opined that a “patent on a method of data encryption is not *per se* invalid, as long as it is specific enough.” *Id.*, at *5. In rejecting the defendants’ argument that the patent described the abstract idea of “authenticating authorship” by “executing a cryptographic operation using a cryptographic key,” Judge Cogan characterized the claims as an invention that improved upon existing block cipher technology by “chang[ing] the encryption key for each data block, based on additional, randomly generated data.” *Id.*, at *4. Judge Cogan concluded that the patent did not merely involve the encryption of data, but rather “claims a specific method of doing so,” and was thus patent eligible. *Id.*, at *7.

In *TQP Dev., LLC v. Intuit Inc.*, No. 2:12-cv-180-WCB, 2014 WL 651935 (E.D. Tex. Feb. 19, 2014), the Honorable William Bryson determined that a patent of a use of a predetermined characteristic of data being transmitted to trigger the generation of new key values for the use in encryption and decryption in a data communication system was patent eligible. *Id.*, at *3, *7. Judge Bryson noted that limitations in the claim so narrowed it that the preemptive effect was “very much diminished.” *Id.*, at *4. “Because the claim [was] drawn to a very specific method of changing encryption keys, it contain[ed] an ‘inventive concept,’ . . . and [was] a far cry from something that could fairly be characterized as a ‘basic tool[] of scientific and technological work.’” *Id.* (citing *Gottschalk v. Benson*, 409 U.S. 63, 67).

The same can be said here. In this case, the concept at issue is not merely the use of a one-way chains, or the conventional process for computing values in a one-way chain. Instead, the Patents-in-Suit describe a method for placing and relocating pegs in a one-way chain, in

order to reduce the computation or storage required for computing the values in a one-way chain. This additional limitation on the process of computing values in a one-way chain is not simply a “trivial appendix to the underlying abstract idea.” *CLS Bank Int’l*, 717 F.3d at 1283. Rather, and taking the facts in the light most favorable to the plaintiff, the Patents-in-Suit set out an inventive process that improves upon existing technology.

Under the present procedural posture, the defendants have not established that the claims are patent-ineligible under Section 101.

B. Motion to Dismiss for Failure to State a Claim

The defendants also seek to dismiss the complaint on the grounds that it does not allege sufficient facts to state a plausible claim for direct or indirect infringement, or that the defendants’ allegedly infringing conduct was willful. The pleading applicable pleading standard is the familiar one set out in *Ashcroft v. Iqbal*, 556 U.S. 662 (2009) and *Bell Atl. Corp. v. Twombly*, 550 U.S. 544 (2007). *See Paone*, 2015 WL 4988279, at *13.

Rule 8 of the Federal Rules of Civil Procedure requires a plaintiff to provide “a short and plain statement of the claim showing that the pleader is entitled to relief.” Fed. R. Civ. P. 8(a)(2). This demands more than “an unadorned, the-defendant-unlawfully-harmed-me accusation.” *Iqbal*, 556 U.S. at 678 (citations omitted). A complaint that merely “tenders naked assertions devoid of further factual enhancement” is not sufficient. *Id.*

In evaluating a motion to dismiss, a court must accept as true the facts alleged in the complaint, and draw all reasonable inferences in the plaintiff’s favor. *Town of Babylon v. Fed. Hous. Fin. Agency*, 699 F.3d 221, 227 (2d Cir. 2012). However, the principle that “a court must accept a complaint’s allegations as true is inapplicable to threadbare recitals of a cause of action’s elements, supported by mere conclusory statements.” *Iqbal*, 556 U.S. at 678. A

complaint will only survive a motion to dismiss if the law recognizes the claims, and if it pleads “enough facts to state a claim to relief that is plausible on its face.” *Twombly*, 550 U.S. at 570. An allegation is plausible on its face when the plaintiff “pleads factual content that allows the court to draw the reasonable inference that the defendant is liable for the misconduct alleged.” *Iqbal*, 556 U.S. at 678. “[D]etermining whether a complaint states a plausible claim is [a] context-specific” task. *Id.* at 679.

On a motion to dismiss, consideration is “limited to the factual allegations in plaintiff’s complaint, which are accepted as true, to documents attached to the complaint as an exhibit or incorporated in it by reference, to matters of which judicial notice may be taken, or to documents either in plaintiff’s possession or of which plaintiff had knowledge and relied on in bringing suit.” *Faconti v. Potter*, 242 F. App’x 775, 777 (2d Cir. 2007) (alterations and citations omitted).

i. Direct Infringement

Direct infringement claims are governed by Section 271(a), which provides “whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States . . . during the term of the patent . . . infringes the patent.”¹⁰ 35 U.S.C.A. § 271(a). In order to prove direct infringement, the plaintiff must establish that a party performed every element of a claimed invention. *BMC Res., Inc. v. Paymentech, L.P.*, 498 F.3d 1373, 1378 (Fed. Cir. 2007) *overruled on other grounds by Akamai Techs., Inc. v. Limelight Networks, Inc.*, 692 F.3d 1301 (Fed. Cir. 2012); *see also Advanced Steel Recovery, LLC v. X-Body Equip., Inc.*, 808 F.3d 1313, 1319 (Fed. Cir. 2015) (every limitation set forth in a claim must be found in an accused product).

¹⁰ The defendants’ mental state is immaterial, as direct infringement is a strict liability offense. *Commil USA, LLC v. Cisco Sys., Inc.*, 135 S. Ct. 1920, 1926 (2015).

Until recently, courts analyzed the sufficiency of a complaint alleging direct infringement by comparing the allegations in the complaint with Form 18 of the Federal Rules of Civil Procedure. *K-Tech Telecommunications, Inc. v. Time Warner Cable, Inc.*, 714 F.3d 1277, 1283 (Fed. Cir. 2013) (“to the extent any conflict exists between *Twombly* (and its progeny) and the Forms regarding pleading requirements, the Forms control”). Form 18, which set out the requirements for a pleading alleging direct infringement, required:

(1) an allegation of jurisdiction; (2) a statement that the plaintiff owns the patent; (3) a statement that defendant has been infringing the patent ‘by making, selling, and using [the device] embodying the patent’; (4) a statement that the plaintiff has given the defendant notice of its infringement; and (5) a demand for an injunction and damages.

K-Tech Telecommunications, 714 F.3d at 1283 (citation omitted). A complaint alleging these elements was essentially immune from attack on the grounds that the pleading was insufficient.

Id.

As of December 1, 2015, the Federal Rules of Civil Procedure no longer included Form 18. *See e.Digital Corp. v. iBaby Labs, Inc.*, No. 15-cv-05790-JST, 2016 WL 4427209, at *2 (N.D. Cal. Aug. 22, 2016). As a result of that change, most courts to consider the question have concluded that the *Twombly* pleading standard now applies to direct infringement claims. *See id.* (collecting cases). However, the extent to which a plaintiff must plead direct infringement element-by-element remains unsettled. *Compare Niazi v. Pressure Prod. Med. Supplies, Inc.*, No. 16-cv-670-JDP, 2017 WL 108114, at *1 (W.D. Wis. Jan. 11, 2017) (declining to require a plaintiff to plead direct infringement element-by-element) *with Scripps Research Inst. v. Illumina, Inc.*, No. 16-cv-661-JLS-BGS, 2016 WL 6834024, at *5 (S.D. Cal. Nov. 21, 2016) (“to adequately plead direct infringement, a plaintiff must allege sufficient facts to plausibly show that a defendant’s accused instrumentality contains each limitation of the asserted patent claim.”).

I decline to require that the plaintiff plead direct infringement of each and every element of the allegedly infringed claims. Imposing such a requirement would be inconsistent with the admonition that the court, in considering a motion to dismiss, should draw all reasonable inferences in the light most favorable to the plaintiff. At the pleading stage, the plaintiff need only “nudge” its claim “across the line from conceivable to plausible.” *Iqbal*, 556 U.S. at 680.

In this case, the plaintiff specifically identifies the CoreStreet-branded and ActivIdentity-branded products, which, according to the plaintiff, directly infringe the Patents-in-Suit. In support of its direct infringement claim, the plaintiff alleges that these products “generate certificate validation proofs in the manner described in the ASSA Patents, namely, utilizing efficient one-way chain computation techniques of the type developed by Dr. Jakobsson and described and claimed in the Patents-in-Suit.” The plaintiff suggests that the products were designed to include “certificate validation infrastructure features such as extremely low latency and scalability to very large numbers of certificates.” In addition, the plaintiff lists the claims from the Patents-in-Suit that the defendants allegedly infringed. Together, these allegations are sufficient to plead direct infringement.

ii. Indirect Infringement

The defendants move to dismiss the claims for indirect infringement—*i.e.*, induced or contributory infringement—on the grounds that the plaintiff has not alleged sufficient facts to state a claim upon which relief can be granted. (Defs.’ Mem. at 21–23 (ECF No. 21-1).)

1. Inducing Infringement

The plaintiff alleges that the defendants induced infringement within the meaning of Section 271(b), which provides, “Whoever actively induces infringement of a patent shall be liable as an infringer.” 35 U.S.C.A. § 271(b). Induced infringement, unlike direct infringement,

is not a strict liability offense. *Commil USA, LLC v. Cisco Sys., Inc.*, 135 S. Ct. 1920, 1926 (2015). To state a claim for induced infringement, the plaintiff must allege that the defendants: “(1) had knowledge of the patent-in-suit; (2) knew the induced acts were infringing; and (3) specifically intended to encourage another’s infringement.” *Carson Optical Inc. v. eBay Inc.*, No. 15-cv-3793-KAM-SIL, 2016 WL 4385998, at *3 (E.D.N.Y. Aug. 17, 2016) (citations omitted). Said another way, the defendants must induce activity intentionally that they actually knew to be infringing. *Glob.-Tech Appliances, Inc. v. SEB S.A.*, 563 U.S. 754, 765 (2011).

The complaint sufficiently alleges that the defendants’ end-users engaged in infringing activity. The plaintiff asserts that the defendants sold the allegedly infringing CoreStreet and ActivIdentity products to consumers. A customer’s use of an infringing process is primary infringement. *Conair Corp. v. Jarden Corp.*, No. 13-cv-67020AJN, 2014 WL 3955172, at *2 (S.D.N.Y. Aug. 12, 2014) (citing *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 484 (1964); R. Carl Moy, *Moy’s Walker on Patents* § 14:32 (4th ed.)). Consequently, while the complaint does not specify instances of direct infringement, it adequately alleges infringing activity by the defendants’ “end users.” *Conair Corp.*, 2014 WL 3955172, at *2; *see also Paone*, 2015 WL 4988279, at *13 (“Plaintiff’s allegations that the ‘end users’ of defendants’ accused products infringe the . . . patent are sufficient.”).

Additionally, in light of the fact that the defendants’ products are allegedly infringing, and drawing all reasonable inferences in the plaintiff’s favor, the mere sale of the allegedly infringing product is enough to plead the defendants’ intent to induce their end-users’ infringement. *Conair Corp.*, 2014 WL 3955172, at *3; *see also Ricoh Co. v. Quanta Computer Inc.*, 550 F.3d 1325, 1343 (Fed. Cir. 2008) (the defendant’s “role as the designer and manufacturer of the [allegedly infringing devices] may evidence an intent sufficiently specific to

support a finding of inducement.”). Finally, the plaintiff alleges that the defendants “continued to make, use, offer to sell, sell, and/or import into the United States” the infringing products after the plaintiff put the defendants on notice of its infringement by sending it letters notifying it of the Patents-in-Suit and inquiring into whether the defendants’ products incorporated the techniques attributed to Dr. Jakobsson in the ASSA Patents. This adequately pleads that the defendants had the requisite knowledge.

Accordingly, I conclude that the plaintiff has stated a claim for inducing infringement.

2. Contributory Infringement

The plaintiff asserts that the defendants are liable for contributory infringement. Under Section 271(c), “[w]hoever offers to sell or sells within the United States . . . a material or apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use, shall be liable as a contributory infringer.” 35 U.S.C.A. § 271(c). To prove contributory infringement, the plaintiff must demonstrate: “1) that there is direct infringement, 2) that the accused infringer had knowledge of the patent, 3) that the component has no substantial noninfringing uses, and 4) that the component is a material part of the invention.” *Fujitsu Ltd. v. Netgear Inc.*, 620 F.3d 1321, 1326 (Fed. Cir. 2010).

The defendants assert that the complaint is inadequate because it does not allege that the defendants sold a material part of the invention, or that they knew the accused products were adapted for infringing use. The arguments do not succeed for reasons already outlined—the plaintiff adequately alleges direct infringement, and asserts that the defendants sold ActivIdentity and CoreStreet products that infringed the plaintiff’s Patents-in-Suit that had as their subject the

techniques for efficient computation of values in a one-way chain. From those allegations, a reasonable inference can be drawn that the plaintiff expected that customers would use its products and, by doing so, infringe the plaintiff's patent. Further, the complaint sufficiently alleges that the defendants knew about the plaintiff's patents by describing the reference to the Patents-in-Suit in the ASSA Patents and by setting out the letters that the plaintiff sent to the defendants.

The defendants also argue that the plaintiff does not adequately allege that a material part of the ActivIdentity and CoreStreet products lacked non-infringing uses. (Defs.' Mem. at 22–23 (ECF No. 21-1).) The complaint specifically notes that the ActivIdentity and CoreStreet products “have no substantial use outside of the context of certificate validation,” and that this cannot be performed without the efficient one-way chain computation techniques claimed in the Patents-in-Suit. While this seems conclusory, many courts post-*Iqbal* have not demanded detailed factual allegations that the defendants' products lack substantial noninfringing uses. *Conair Corp.*, 2014 WL 3955172, at *4 (collecting cases). I agree with this approach.

Accordingly, the plaintiff's claim for contributory infringement survives the defendants' motion to dismiss.

iii. Willful Infringement

Willful infringement requires that the plaintiff plead that the defendants were “aware of the asserted patent but acted despite an objectively high likelihood that [their] actions constituted infringement of a valid patent.” *Paone*, 2015 WL 4988279, at *14 (citations omitted); *see also i4i Ltd. P'ship v. Microsoft Corp.*, 598 F.3d 831, 860 (Fed. Cir. 2010), *aff'd*, 564 U.S. 91 (2011). The complaint adequately alleges that the defendants committed acts of infringement with full knowledge of the plaintiff's rights in its patents. That is sufficient.

CONCLUSION

For the foregoing reasons, the defendants' motion to dismiss is denied.

SO ORDERED.

/s Ann M. Donnelly

Ann M. Donnelly
United States District Judge

Dated: Brooklyn, New York
February 17, 2017